AMENDMENTS TO THE CLAIMS

Claims 1-18 are pending. All pending claims and their current status have been reproduced below.

1. (Original) A method of detecting at least one of a pan and a zoom in a video sequence, comprising:

selecting a set of frames from a video sequence;

determining a set of motion vectors for each frame in the set of frames;

identifying at least two largest regions in each frame having motion vectors with substantially similar orientation in a reference coordinate system;

determining percentages of each frame covered by the at least two largest regions;

determining a statistical measure of the motion vector orientations in the reference coordinate system for at least one of the two largest regions; and

comparing the percentages and statistical measure to threshold values to identify at least one of a pan and a zoom in the video sequence.

2. (Original) The method of claim 1, wherein the step of selecting a set of video frames from a video sequence further comprises:

identifying a scene cut between two frames in the video sequence; and responsive to the identification of a scene cut,

selecting a set of video frames from the video sequence that includes all the frames in the video sequence up to and including a frame just before the scene cut.

3. (Original) The method of claim 2, wherein frame differences and motion information are used to identify a scene cut.

4. (Original) The method of claim 1, wherein the reference coordinate system is one from the group of reference coordinate systems consisting of polar, Cartesian, spherical and cylindrical coordinate systems.

5. (Original) The method of claim 1, wherein the percentages of each frame covered by the at least two largest regions are determined from the number of pixels in each region as a percentage of the total number of pixels in a frame.

6. (Original) The method of claim 1, wherein the statistical measure is a variance.

7. (Original) A system for detecting at least one of a pan and a zoom in a video sequence, comprising:

a preprocessor for selecting a set of frames from a video sequence; and

a motion analyzer for determining a set of motion vectors for each frame in the set of frames, identifying at least two largest regions in each frame having motion vectors with substantially similar orientation in a reference coordinate system, determining percentages of each frame covered by the at least two largest regions, determining a statistical measure of the motion vector orientations in the reference coordinate system for at least one of the two largest regions, and comparing the percentages and statistical measure to threshold values to identify at least one of a pan and a zoom in the video sequence.

8. (Original) The system of claim 7, wherein the step of selecting a set of video frames from a video sequence further comprises

identifying a scene cut between two frames in the video sequence and responsive to the identification of a scene cut, and

selecting a set of video frames from the video sequence that includes all the frames in the video sequence up to and including a frame just before the scene cut.

9. (Original) The system of claim 8, wherein frame differences and motion information are used to identify a scene cut.

10. (Original) The system of claim 7, wherein the reference coordinate system is one from the group of reference coordinate systems consisting of polar, Cartesian, spherical and cylindrical coordinate systems.

11. (Original) The system of claim 7, wherein the percentages of each frame covered by the at least two largest regions are determined from the number of pixels in each region as a percentage of the total number of pixels in a frame.

12. (Original) The system of claim 7, wherein the statistical measure is a variance.

13. (Original) A computer-readable medium having stored thereon instructions which, when executed by a processor in a system for detecting at least one of a pan and a zoom in a video sequence, cause the processor to perform the operations of:

selecting a set of frames from a video sequence;

determining a set of motion vectors for each frame in the set of frames;

identifying at least two largest regions in each frame having motion vectors with substantially similar orientation in a reference coordinate system;

determining percentages of each frame covered by the at least two largest regions;

determining a statistical measure of the motion vector orientations in the reference coordinate system for at least one of the two largest regions; and

comparing the percentages and statistical measure to threshold values to identify at least one of a pan or a zoom in the video sequence.

14. (Original) The computer-readable medium of claim 13, wherein the step of selecting a set of video frames from a video sequence further comprises:

identifying a scene cut between two frames in the video sequence; and responsive to the identification of a scene cut,

selecting a set of video frames from the video sequence that includes all the frames in the video sequence up to and including a frame just before the scene cut.

15. (Original) The computer-readable medium of claim 13, wherein frame differences and motion information are used to identify a scene cut.

16. (Original) The computer-readable medium of claim 13, wherein the reference coordinate system is polar coordinates.

17. (Original) The computer-readable medium of claim 13, wherein the percentages of each frame covered by the at least two largest regions are determined from the number of pixels in each region as a percentage of the total number of pixels in a frame.

18. (Original) The computer-readable medium of claim 13, wherein the statistical measure is a variance.